

SFL as a Tool for Teaching Translation
Translating Interpersonal Metafunction's Modality

اللسانيات الوظيفية النسقية كأداة لتعليم الترجمة: ترجمة الوظيفة التعالقية (الجهة)

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Abstract:

This research paper offers an overview of how systemic functional linguistics can be used as both a theoretical framework and a useful tool for teaching translation given that both are concerned with meaning. In addition, it analyses modality, and shows how the examination of its systems helps translation students assess the lexico-grammatical choices made by translators in target texts. Using a qualitative descriptive approach, the study examines two parallel English-Arabic popular science texts. The methodology involves a systematic comparative analysis of modality markers in both source and target texts, examining modal verbs, adjuncts, and expressions at lexico-grammatical and semantic levels. The findings reveal that analyzing modality systems through systemic functional linguistics helps students grasp the significance of metalinguistic elements in translation, thus enabling them to make more informed decisions when translating modality in popular science texts. This approach enhances students' awareness of cross-linguistic modal expressions and their semantic implications.

Keywords: Systemic functional linguistics; Teaching translation; Interpersonal metafunction; Modality systems; Popular science texts.

الملخص:

يتناول المقال كيفية استخدام اللسانيات الوظيفية النسقية كإطار نظري وأداة فعالة لتدريس الترجمة، ويتمحور البحث حول الجهة، أحد مكونات الوظيفة التعالقية، ويهدف إلى توضيح كيفية استفادة طلاب الترجمة من تحليل أنظمة الجهة لتحديد دقة القرارات التي يتخذها المترجمون فيما يتعلق بالإنشاء المعجمي-النحوي في النص الهدف، وذلك باستعمال المنهج الوصفي اعتمادا على التحليل المقارن لنصين متوازيين من نصوص التبسيط العلمي وترجمتهما إلى اللغة العربية. تبين لنا أن تحليل الجهة باستخدام اللسانيات الوظيفية النسقية في النصين الأصل والهدف سيساعد الطلبة على إدراك أهمية العناصر غير لغوية في الترجمة، وبالتالي سيمكنهم من اتخاذ القرارات الصحيحة مستقبلا أثناء ترجمة الجهة في نصوص التبسيط العلمي.

كلمات مفتاحية: اللسانيات الوظيفية النسقية؛ تعليم الترجمة؛ الوظيفة التعالقية؛ الجهة؛ نصوص التبسيط العلمي. كلمات مفتاحية إدارة أوباما، الإسلام السياسي، جماعة الإخوان المسلمين، علاقات دبلوماسية غير متسقة

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1- Introduction:

We shall explore in this study the benefits that translation students can derive from employing a systemic functional linguistics (henceforth SFL) framework to analyze the source text (henceforth ST), with particular emphasis on the manner in which modality systems are represented in the target text (henceforth TT).

A fundamental concept in SFL, modality uses syntactic and semantic resources to express the speaker's or writer's perspective, assessment, or judgment of possibility, obligation, necessity, or desirability of a particular action, event, or situation. Its nature may significantly have an impact on how language is used for interpersonal communication, including expressing opinions and interacting with others.

Modality is defined by Vinay and Darbelnet (1995, p. 142) as the speaker's attitude towards a statement, based on whether it is regarded as a necessity, a fact, a belief, etc, while its main function is to highlight the uncertainty scope between 'yes' and 'no'. (Halliday & Matthiessen, 2014, p. 176). Bell (1991, p. 176) states that when translating modality, the main challenge is "for the translator...to match the operators by finding equivalents between the languages involved." Therefore, translating modality can be tricky, because through the translation process, it is crucial to render the equivalent terms in the target language, and in order to translate modality accurately, it is necessary to apprehend the subtleties of modality's expression in the source language.

In this paper, our intention is to provide translation students and teachers with a functional insight into how the expression of modality functions in the ST and how it can be translated through analyzing the type, orientation, value and polarity in the ST, which will lead us to address four questions in order to investigate the following issues:

- Why is SFL the appropriate model to be exploited for teaching translation purposes?
- How can analyzing modality in the ST using the SFL model be helpful to translation students?
- What are the most frequent mistakes that students face when translating modality from English to Arabic?
- How can these mistakes be avoided by relying on the SFL model?

From the above-mentioned questions, we hypothesize that both analytically and in translation practice, the SFL theoretical framework may provide a useful metalinguistic toolset for translation teaching due to its highly systematic structure. Furthermore, since modality is a component of interpersonal metafunction in SFL, analyzing its systems in ST may result in recognizing the attitude of the speaker, thus, enables students to convey the speaker's underlying attitude or judgment in addition to the literal meaning, the thing that may lead students to avoid making mistakes when

translating modality from English into Arabic. All things considered, employing SFL to analyze modality in the ST may empower translation students to make deft decisions beyond literal translation. It also may enable students to reconstruct a functionally identical text in the TT and promotes a deeper comprehension of the speaker's intent.

2- Theoretical framework:

The purpose of this research requires the following theoretical framework:

2.1- Halliday's SFL and translation:

Early in the 1960s, M.A.K. Halliday introduced SFL to the world. It was one of the theories that did not attract as much attention as other modern linguistic theories, such as Chomsky's (Sampson, 1980, p. 235), despite its strong methodological framework and applicability to various aspects of language. His theory is functional, according to Halliday (1994), because it was designed to account for the way in which the language is used.

According to Yallop (1987, p. 347), linguists reject the common notion that proficiency in two languages alone qualifies someone as an effective translator. Yallop contends that genuine expertise in translation lies in theoretical analysis and comprehension. He thinks that Halliday's main contribution to linguistics is his attempts to apply linguistic theories in the professional practice.

Given that translation is a linguistic activity par excellence and inseparable from practical application, it is considered a fertile field for testing the efficiency of Systemic Functional Linguistics (SFL) applications.

SFL stands out as one of the most important linguistic theories, emphasizing the pivotal role of linguistics in translation studies. According to Newmark (1987, p. 293), it is logical that the linguistic theory of Halliday is a useful tool that permits to identify the components of the ST and its relation with the TT since the translator's main interest is meaning.

Manferdi (2014, pp. 77-79) observes that Halliday, a linguist and grammarian, showed a strong interest in linguistics connected to both the theoretical and practical aspects of translation. Halliday aimed to use SFL to develop an analytical framework for the translation process since his theory's main goal is to analyze language based on the grammar structure's function in communication. Therefore, it forms a methodical and nuanced approach to examine the communication process in both the ST and TT, which will allow translators to check the accuracy of the translated material in terms of communication function and, going beyond simple literal translation.

Explaining thoroughly Halliday's linguistic theory (SFL) is not needed in this research, however, a brief presentation of the key variables must be outlined.

Halliday offers a very distinct perspective on language, emphasizing the role that it plays in social situations; he did not perceive language as a mean of merely expressing ideas that were already in

the human's mind, rather, he believes that it actively shapes our perceptions and understanding of the world. Consequently, he sees that understanding the nature of language requires a functional approach, considering it as an entity that is not self-sufficient but characterized by an instrumental nature created to serve human interaction (Parret, 1974, p. 83) . The primary objective of his (SFL) model is to offer a thorough perspective of language as "a network of systems or interconnected sets of choices for creating meaning." (Halliday M. , 1994, p. 15).

Kristin Davidse (1987, p. 40) succinctly summarized the characteristics of Halliday's functional theory in two main points:

- Language is a paradigmatic meaning potential that enables people to convey meaning in a given situation within a certain culture.
- Both intrinsic and extrinsic metafunctions of language reflect the functions played by language in social reality.

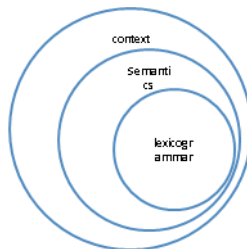
In view of the forgoing, SFL's main interest is on language's social function, it establishes that language is used in various circumstances and for various purposes. In addition, SFL sees language as a multifaceted system with connected choices, grammar, vocabulary, and phonology are some of these options, and the metafunctions are embodied differently depending on how we select these components.

Halliday's SFL theory is built upon two basic principles:

2.1.1- Stratification:

SFL classifies language into strata or levels, and the only way to advance from one level to the next is through the use of "realization," which signifies the relationship between levels. Halliday (1994, p. 15) emphasizes that "Language is a sophisticated semiotic system made up of various levels, or layers". The diagram below illustrates the stratification of language:

Fig1: The language stratification



Source: (Halliday & Matthiessen , 2004, p. 25)

Lexicogrammar: The particularity of each language lies in its intermediate level of lexicogrammar, i.e., the grammatical level; its function is to free language from the constraints of bi-uniqueness

(Eggins, 2004, p. 116). Therefore, it focuses on how words are arranged syntactically in each language to form an utterance that is analyzed in terms of roles using a functional approach.

Semantics: It includes pragmatics, i.e. meanings in a given text; it contains three metafunctions: interpersonal, ideational, and textual.

Context: With three variables: field, which refers to the subject matter (what are we talking about). Tenor, which indicates everyone involved in the text (the audience); and mode, which indicates the structure of language (spoken, written, etc.).

Metafunctions:

Butt (2001, p. 05) argues that language appears to have developed for three purposes:

- To discuss events as they occur, will occur, or have occurred
- To interact and/or convey perspectives
- To integrate the outputs of the preceding functions into a cohesive whole.

The context of a situation reflects the three main functions of language as it shapes our language choices. The SFL model identifies three metafunctions that speakers and writers use language for; Thompson (2014, p. 30) sees that the designation of each of the metafunctions is reasonable:

- Experiential (using language to talk about the world)
- Interpersonal (using language to interact with other people)
- Textual (organizing language to fit in its context)

Since this research paper is concerned mainly with modality, the interpersonal metafunction should be sketched as a key concept.

2.2- Interpersonal metafunction:

The interpersonal metafunction represents interactions with people as we create relations and communicate with them to express and exchange opinions about states or events; it “employs language to encode interaction, demonstrate the strength of our assertions, convey notions of duty and preference, and articulate our attitudes.” (Butt, Fahey, Feez, Spinks, & Yallop, 2001, p. 05).

The main goal of any exchange is to give or demand a commodity; therefore, we have two types of exchanges:

- Verbal exchange: It is all about information, the speaker give or ask for a commodity (information) by making statements or asking questions.
- Non-verbal exchange: It is all about goods-and-services, the speaker makes offers when he gives good-and-services, whilst he makes commands when he demands them.

It is certain that these functions are referred to by the conventional speech functional categories of offer, command, question, and statement. These functions are related to specific grammatical structures:

- Imperative clauses express commands,
- Declarative clauses convey statements,
- Interrogative clauses express questions.

Offer is associated with modality, is not linked to a particular mood choice.

When the speaker makes a statement or a question (information exchanged), it is a proposition, while making offers and demands (goods-and-services exchanged) is called proposals.

Both propositions and proposals are realized by grammatical mood options:

- Subject + finite = Declarative

Declarative means that the listener or the reader has been told something by the speaker or the writer, for example: John did the whole work.

- Finite + subject = Interrogative

Interrogative means that the listener or the reader has been asked something by the speaker or the writer, for example: Did John do the whole work?

- No subject + no finite = Imperative

Imperative means that the listener or the reader has been prompted to do something by the speaker or the writer, for example: Do the whole work.

2.2.1- Modality

As we interact and communicate with each other, we use language to express our attitudes. We can assert confidently, express uncertainty, make suggestions, debate issues, agree or disagree with others' arguments, and so on. In more technical linguistic terms, this involves adopting a stance, which refers to "the speaker's or writer's emotion, attitude, viewpoint, or position as expressed in the discourse." (Strauss & Feiz, 2014, p. 275). However, at times, speakers aim to indicate uncertainty in their messages; that is, they are seeking a position between a clear yes and a clear no (Butt, Fahey, Feez, Spinks, & Yallop, 2001, p. 113).

According to Butt (2001, p. 113), the term modality indicates the space between yes and no, the space where the speaker chooses to have a position in, such as probability, usuality, obviousness, obligation, and inclination.

It exists three ways for expressing modality:

- Modal Finite.
Example: She may be working.
- Mood Adjunct (Adverbial group or prepositional phrase.

Example: She is probably working

- Interpersonal grammatical metaphor.

Example: I think she is working.

Modality has four sub-systems:

Type: There are two types that can be distinguished based on how they relate to two different kind of clauses (proposition/proposal) (Halliday & Matthiessen , 2004, p. 147) :

- **Modalization (deontic modality):** Refers to “a sophisticated aspect of English grammar that pertains to the diverse methods through which a language user can interject in their message, conveying various attitudes and judgments.” (Eggins, 2004, p. 172). Modalization refers to using modality to argue about the probability or frequency of propositions.
- **Modulation (epistemic modality):** it is when the speaker assesses the expected proposal, in other words, assessing the scales of obligation, inclination, ability or potentiality, incorporating rank of obligation (allowed to/ supposed to) and rank of inclination (willing to/ determined to) (Matthiessen, Teruya, & Lam, M, 2010, p. 146)

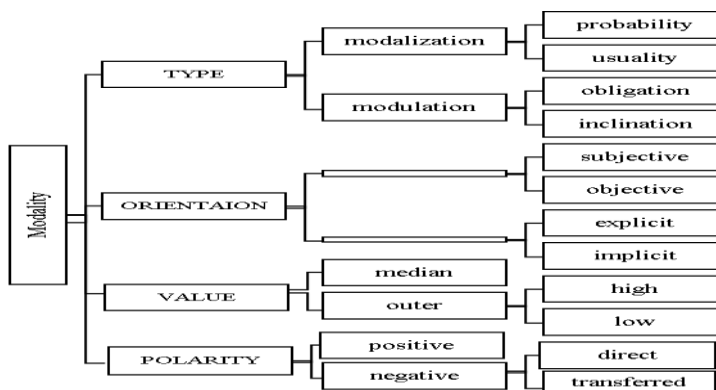
Orientation (responsibility): Represents “the extent to which the speaker openly acknowledges responsibility for the attitude being conveyed.” (Eggins, 2004, p. 73), in other words, the speaker may express his point of view in a clear way (subjective); or in an unclear way (objective). In addition, (implicit) is when the modality is expressed in the same clause as the main proposition, and (explicit) is when the modality is expressed in a separate clause (Eggins, 2004, p. 75).

Value (commitment): Represents “the degree to which the speaker commits herself to the validity of what she is saying” (Eggins, 2004, p. 73), in other words, it is useful to evaluate modality: high, median, and low.

Polarity: According to Eggins (2004, p. 68), polarity is a basic part of the meaning, and it is treated as if it were absolute, in other words, a message is either positive or negative.

In the following figure, Halliday (1994, p. 354) drew an illustration of the four systems of modality:

Fig2 : modality systems



Source: (Halliday M. , An introduction to functional grammar, 1994, p. 354)

3. Methods :

This study investigates modality translation in popular science texts using a descriptive-analytical methodology based on (SFL). SFL's focus on language meaning-making, especially in light of Halliday's emphasis on interpersonal metafunction in translation—which he views as more important than maintaining propositional content (2001, p. 16) —justifies its choice as a theoretical framework.

There are three main levels in the analytical framework:

1. Modality value
2. Modality type
3. Modality orientation

The fundamental unit of analysis in this study is the clause. The methodology employs a methodical four-step procedure for every example under analysis:

1. Identification of modality type in the source text (ST)
2. Analysis of modality realization in (ST)
3. Examination and categorization of modality value
4. Assessment of modality orientation

Halliday specified the orientation of SFL to describe language as a resource for meaning. Consequently, this orientation has made it easier to focus on the semogenesis of scientific discourse (Halliday & Martin, 1996, p. 26), therefore, this methodological framework enables:

- Systematic analysis of English-Arabic scientific translation
- Detailed examination of modality realizations in scientific texts
- Investigation of functional roles of different modality types
- Classification of translation issues at the interpersonal metafunction level

While structural changes may occur in translation, they fall outside this study's scope, which focuses specifically on modality realizations.

3.1- Data selection:

In order to accomplish this research, we opted for two parallel texts, particularly related to the well-known worldwide issue "climate change", both extracted from the website of The Intergovernmental Panel on Climate Change (IPCC), which represents the United Nations body for assessing the science related to climate change. It includes different official reports and popular scientific discourses intended for a general audience.

The two parallel texts were carefully selected based on the research's purpose, both are rich of different modality realizations, and the scientific terminology included is simple given that the intended reader is not an expert:

	English text (ST)	Arabic text (TT)
Text No.1	Is the Current Climate Change Unusual Compared to Earlier Changes in Earth's History? (IPCC, 2007 a., p. 114)	هل يعتبر تغير المناخ الحالي غير إعتيادي مقارنة بالتغيرات السابقة التي حدثت في تاريخ الكرة الارضية؟ (IPCC, 2007 b., pp. 124-125) ص 125-124
Text No.1	Are Extreme Events, Like Heat Waves, Droughts or Floods, Expected to Change as the Earth's Climate Changes? (IPCC, 2007 a., p. 122)	هل يُتوقع أن تتغير الظواهر المتطرفة، كموجات الحر والجفاف والفيضان بتغير مناخ الارض؟ (IPCC, 2007 b., p. 136)

The data represents popular science texts relating to climate change topics, they are exploited as a corpus that serves as material to analyze the translation of modality based on an SFL framework.

4. Analysis and Results:

A complicated linguistic phenomenon, modality appears in language through a variety of grammatical resources. Interpersonal grammatical metaphors, mood adjuncts, and finite verbal operators are the three main modal expression mechanisms that are methodically examined in this section. With an emphasis on maintaining semantic and pragmatic implications across linguistic systems, each subsection examines the translation of these unique modal realizations from English to Arabic.

4-1. Translation of modality realized by a finite:

Example 1:

1- Second, local changes **must** not be confused with global changes. (IPCC, 2007 a., p. 114)

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modulation (obligation)	Finite (must)	High	Implicit / Subjective

2- ثانياً، من الضروري التمييز بين التغيرات المحلية والتغيرات العالمية. (IPCC, 2007 b., p. 124)

Collins (2005, p. 251) defines strong (high) obligation as “..expressed primarily through "must," it entails external pressure on the subject regarding obligation and can convey "requirements, duties, directives, recommendations, and similar expressions.”, which is the case with (1), modality is instantiated through the finite “**must**” that indicates modality of (high) obligation.

However, in the ST, the translator chose to instantiate modality with a prepositional phrase “من الضروري” which means literally « it is necessary »(explicit and objective), instead of using the modal verb “يجب” in Arabic or its modal nominal “وجب”.

If we replace the congruent realization “must” with the metaphorical realization “it is necessary”, the sentence structure changes to:

3- Second, **it is necessary** not to confuse local changes with global changes.

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modulation (obligation)	Interpersonal grammatical metaphor (it is necessary)	High	Explicit / objective

We can notice that by changing modality realization from congruent to metaphorical in (3), the orientation has changed automatically from implicit/subjective to explicit objective, but the modality type along with the modality value were completely preserved.

Thus, the prepositional phrase “من الضروري” in (2), can be evaluated as an interpersonally correct choice since it adequately renders the function of high obligation of the ST resulting in preservation of modality type and modality value.

Consequently, the meaning was completely rendered in TT.

Example 2:

4- The medieval level of warmth is uncertain, but **may** have been reached again in the mid-20th century. (IPCC, 2007 a., p. 114)

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modalization (probability)	Finite (may)	Median	Implicit / Subjective

5- يبقى مستوى إحتترار القرون الوسطى غير أكيد، ولكن من الممكن أن يكون قد تم التوصل إليه مرة أخرى في منتصف القرن العشرين. (IPCC, 2007 b., p. 124)

Modality in (4) is instantiated through the finite “**may**”, it indicates modality of probability that “denotes a thing which is likely to happen” (Hornby , 2005, p. 1201).

It was translated in (5) using the prepositional phrase “من الممكن” that means literally in the context of (4) (it is possible), instead of using the formal equivalent which is the particle modal “ربما”.

If we replace the congruent realization “may” with the metaphorical realization “it is possible”, the sentence structure changes to:

- 6- The medieval level of warmth is uncertain, but **it is possible** that it have been reached again in the mid-20th century.

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modalization (probability)	Interpersonal grammatical metaphor (it is possible)	Median	Explicit / objective

We notice that by changing modality realization from congruent to metaphorical in (6), the orientation has changed automatically from implicit/subjective to explicit objective, but the modality type along with the modality value were completely preserved.

Thus, the prepositional phrase “من الممكن” in (5) conveyed the modality in (4) in terms of :

- Instantiating modality that indicates probability
- The value of the modality is preserved (median)
- The orientation shift did not affect the meaning.

Thus, the meaning was completely preserved and rendered in TT.

Example 3:

- 7- Changes in tectonic activity (which **can** drive natural, slow variations in greenhouse gas concentration) become relevant. (IPCC, 2007 a., p. 114)

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modulation (inclination) Readiness: Ability	Finite (Can)	Low	Implicit / Subjective

8- وتصبح التغيرات في النشاط التكتوني الذي بإمكانه أن يؤدي إلى تغيرات بطيئة في تركيز غاز الدفينة مناسبة. (IPCC, 2007 b., p. 124)

Thompson (2014, p. 71) states that “in offers, it concerns the degree of willingness or inclination of the speaker to fulfill the offer (the speaker may signal: ability/willingness/determination)”. Jumino Suhadi (2011, p. 165) elaborated the readiness: ability as it “implies someone’s ability to do

something with minimum inclination, willingness implies stronger inclination, and determination is the strongest inclination.". Modality in (7) is instantiated through the finite "can" that indicates modality of inclination (readiness: ability), it was conveyed in (8) using the prepositional phrase "يُمكنه أن" that means literally (is able to).

If we replace the congruent realization "can/ finite" with another congruent realization "is able to/extending the predicator", the sentence structure changes to:

- 9- Changes in tectonic activity (which is **able to** drive natural, slow variations in greenhouse gas concentration) become relevant.

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modulation (inclination) Readiness: Ability	Predicator (is able to)	Low	Implicit / objective

We notice in this example that the modality realization is still congruent although we changed its manifestation from finite to extending the predicator, however, the orientation has changed from implicitly subjective to implicitly objective, but this did not cause any shifts in modality type (modulation) or modality value (low).

Thus, the prepositional phrase "يُمكنه أن" in (8) conveyed the modality in (7) in terms of:

- Instantiating modality that indicates inclination (readiness: ability)
- The value of the modality is preserved (low)
- The orientation shift did not affect the meaning.

Thus, the meaning was completely preserved and rendered in TT.

Example 4:

- 10- If warming continues unabated, the resulting climate change within this century **would be** extremely unusual in geological terms. (IPCC, 2007 a., p. 114)

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modalization (probability)	Finite (would)	Median	Implicit / Subjective

11- وفي حال استمر الإحترار على ما هو عليه اليوم، فستكون لتغير المناخ في خلال هذا القرن نتائج غير إعتيادية على الاصعدة الجيولوجية. (IPCC, 2007 b., p. 124)

We may use conditional clauses in order to instantiate modality indicating probability, and this is due to the nature of conditional sentences which postulates "that the action in the main clause can happen if the specific situation in the if-clause is fulfilled" (Haza' Al Rdaat, 2017, p. 01), which means, "it is either possible, probable or certain that an action will happen if a certain condition is fulfilled." (Jumino , 2011, p. 160).

First type conditional clauses, such as the one shown in example (10), are used to express situations where the possibility of a future event occurring is there, but the event will only occur if the if-clause's condition is met.

The clause (the resulting climate change within this century would be extremely unusual in geological terms) shows probability, and the modality was realized by using the finite "would", that is "will" in the past tense. The translator used the future tense of the verb to be "ستكون" (س+تكون), the "س" when added to a verb in Arabic it indicates the future tense (al-Ramani, 2004, p. 16),

The first type of conditional clauses in English has a specific structure: if-clause verb (present tense), the main clause verb (future tense).

It is known that "forms such as "could", "might", which historically are past tense forms (of 'may' and 'can'), typically do not function as past tense signals in modern English" (Thompson, 2014, p. 71).

The same rule is applicable to "would" that is the past tense of "will", which means that the tense here is neutralized and it does not have to be the past tense.

The translator conveyed the modality using the future tense of the verb to be "ستكون", which resulted in:

- Instantiating modality that indicates probability
- The value of the modality is preserved (Median)

Thus, the meaning was completely preserved and rendered in TT.

4-2. Translation of modality realized by a mood adjunct:

Example 5:

- 12- Current global temperatures are warmer than they have ever been during at least the past five centuries, **probably** even for more than a millennium. (IPCC, 2007 a., p. 114)

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modalization (Probability)	Mood adjunct (Probably)	Median	Implicit / objective

13- أما درجات الحرارة العالمية الحالية فهي أكثر دفئاً من درجات الحرارة التي سجلت في خلال القرون الخمسة الماضية، لا بل في خلال أكثر من الفية. (IPCC, 2007 b., p. 124)

Modality in (12) is instantiated through the mood adjunct "probably" that represents modality of probability; however, in (13), it appears as a factual statement expressed by using "لا بل" which is a coordinating conjunction in Arabic that is used to negate what is before it and to emphasize what is after (Az-Zudjadjji, 1986, p. 15). As a result, what is after "لا بل" is considered to be a factual statement instead of probable statement, which indicates a shift of interpersonal meaning in the (13) given that the information-negotiating modality instantiated by (probably) in (12) has been rendered as an assertive fact in (13) whereas it should leave room for doubt and skepticism.

Consequently, a wrong message in (13) was produced and the whole meaning has drastically changed due to the translator's choice to underestimate the centrality of accurately rendering the probability meaning.

We suggest the following translation taking into account the previous notes:

14- أما درجات الحرارة العالمية الحالية فهي أكثر دفئًا من درجات الحرارة التي سجلت في خلال القرون الخمسة الماضية، ربما حتى خلال أكثر من ألفية. (IPCC, 2007 b., p. 124)

Modality in (14) is rendered by using the modal particle "ربما" defined by Ahmed Mukhtar Omar (2008, p. 843) as functional word that indicates probability, and both modality type (modalization/probability) and modality value (median) has been restored.

Example 6:

15- The much-discussed abrupt climate shifts during glacial times are not counter-examples, since they were probably due to changes in ocean heat transport, which would be unlikely to affect the global mean temperature. (IPCC, 2007 a., p. 114)

16- تشكل تغيرات المناخ القاسية التي حصلت في خلال العصور الجليدية أمثلة مضادة لأنها من المحتمل أن تكون قد حصلت بفضل تغيرات في نقل درجة حرارة المحيط التي لا يمكن أن تؤثر على نسب درجات الحرارة العالمية (IPCC, 2007 b., p. 125)

We have two modalities of probability realized in this clause:

- A. In the first clause, it was instantiated through the mood adjunct "probably" that indicates modality of probability (median), the translator conveyed the modality by using the prepositional phrase "من المحتمل" with means literally (it is probable) that indicates probability (median) in Arabic as well; therefore, the modality here was fully conveyed in (16).
- B. In the second clause, it was instantiated through the combination of the finite "would" and the mood adjunct "unlikely", this can only show median probability of something to happen or to occur, and it should be rendered as such in Arabic. However, when we examine (16), we see that the translator ignored the space of probability of the whole context and chose to switch the level of probability (from probability to certainty) by using "لا يمكن" consisting of (لا+يمكن). In Arabic, when "لا" comes before the verb it indicates the negation (Ahmed Mukhtar, 2008, p. 1985), therefore, "لا يمكن" here means literally "it is not possible", which indicates that there is no possibility or likelihood for that thing to happen. Consequently, this caused a shift of interpersonal meaning in (16), the level of probability has changed and went up from probability of something to happen to certainty, and the value of probability has changed from median to high, which produced a wrong message in (16).

We suggest the following translation taking into account the previous notes:

17- تشكل تغيرات المناخ القاسية التي حصلت في خلال العصور الجليدية أمثلة مضادة لأنها من المحتمل أن تكون قد حصلت بفضل تغيرات في نقل درجة حرارة المحيط التي من غير المرجح أن تؤثر على نسب درجات الحرارة العالمية.

Yowell Y. Aziz (1989, p. 84) mentioned the verb “يرجح” among the main lexical items that indicates probability along with the prepositional phrase “من الأرجح”. Modality in (17) is rendered by using the prepositional phrase “من غير المرجح” which means “it is unlikely” or “it is not likely”, which indicates (median)probability in Arabic, and the value of the modality has automatically been restored.

4-3. Translation of modality realized by an Interpersonal grammatical metaphor :

Example 7:

18- Along with the risk of drying, there is an increased chance of intense precipitation and flooding due to the greater water-holding capacity of a warmer atmosphere. (IPCC, 2007 a., p. 114)

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modalization (probability)	Interpersonal grammatical metaphor (there is an increased chance)	High	explicit / objective

19- ويرافق خطر الجفاف هذا، تزايد في فرصة تدفق الأمطار والفيضان بسبب قدرة أعظم على حفظ المياه في جو أكثر إحتاراً. (IPCC, 2007 b., p. 124)

Modality in (1) is instantiated through the interpersonal grammatical metaphor “there is an increased chance”. In English, when we say that there is a chance of something to happen, it means that it is probable, therefore, we can replace it by using “there is a high probability, or it is high probable/likely”, which represents modality of probability (high).

In the (19), we can see that the translator conveyed it literally into Arabic by using the word “فرصة” that Ahmed Mukhtar Oamr (2008, p. 1692) cited in his Dictionary of Arabic Language as “the perfect timing to do something”, and this word is seldom used to express probability, the thing that may cause confusion to the reader’s mind. Whereas the word “احتمال” is defined as the probability, possibility or likelihood of something to happen, its opposite is “certainty” (Ahmed Mukhtar, 2008, p. 523).

From both definitions we can see that the word “احتمال” expresses probability more clearly than the word “فرصة”, so the translator should have used the dynamic equivalence of the interpersonal grammatical metaphor “there is an increased chance” to “تزايد احتمال” that clearly indicates probability.

We suggest the following translation taking into account the previous notes:

20- ويرافق خطر الجفاف هذا، تزايد احتمال تدفق الأمطار والفيضان بسبب قدرة أعظم على حفظ المياه في جو أكثر إحترارا

By using "احتمال" instead of "فرصة", the modality realization is clearly established, and the confusion is instantly gone.

Example 8:

21- Third, it is necessary to distinguish between time scales. (IPCC, 2007 a., p. 114)

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modalization (us²uality)	Interpersonal grammatical metaphor (it is necessary)	High	explicit / objective

22- ثالثاً من الهام التمييز بين الأطر الزمنية. (IPCC, 2007 b., p. 124)

Modality in (21) is instantiated through the interpersonal grammatical metaphor "it is necessary" that represents high modality of obligation. It was translated in (22) as "من الهام" that means literally (it is important), which shows high modality of obligation as well (although the right form would be "من المهم" or "من الضروري")

The translator conveyed the modality by using "من الهام", which resulted in:

- Instantiating modality that indicates obligation
- The value of the modality is preserved (high)

Thus, the meaning was completely preserved and rendered in TT.

Example 9:

23- Large changes in global mean temperature, in contrast, require some global forcing (such as a change in greenhouse gas concentration or solar activity). (IPCC, 2007 a., p. 114)

Modality type	Modality realization	Value (commitment)	Orientation (Responsibility)
Modulation (obligation)	Interpersonal grammatical metaphor (require)	High	explicit / subjective

24- ومن جهة أخرى، تتطلب التغيرات الواسعة في نسب درجات الحرارة العالمية بعض المجهود العالمي كتغيير تركيز غاز الدفيئة أو النشاط الشمسي. (IPCC, 2007 b., p. 124)

Modality in (23) is instantiated through the interpersonal grammatical metaphor "require" which is a lexical verb that indicates high modality of obligation but with an explicitly subjective way.

It was translated in (22) as "تتطلب", a verb that means literally "require" (Ahmed Mukhtar, 2008, p. 1407), which shows high modality of obligation as well.

Thus, the value was preserved (high) and the meaning was rendered in TT.

5- Discussion:

The examples and tables provided above are a selection of samples taken from two texts in English and their corresponding translations into Arabic. These works encompass many ways of expressing information in popular science, as well as its translation into Arabic.

It is obvious that popular science texts uses modality to express obligation, usuality, inclination and most importantly probability since it is the dominant type of modality used in both texts due to the uncertainty that prevails over the climate change subject.

Examining the modality translations using SFL framework shows the efficiency of SFL as a tool to teach translation in matters of analyzing modality systems. It helps students to define which **type** of modality the writer is expressing in the ST (modalization: probability/usuality, or modulation: obligation/inclination), its **value** (high/median/low), along with its orientation (subjective/objective/explicit/implicit). This will ensure a full understanding of the writer's intentions by a particular modality in the clause, and it will make it easier for the translation errors to be detected and rectified by students following these steps:

- Defining the modality type that the writer expressed in the ST and The accuracy of its translation in TT. As illustrated in examples (5) and (6) that rendering the modality along with its accurate level (certainty/ probability/possibility) is essential for meaning making, and any changes occurring in TT concerning that will definitely result in a shift of meaning and thus, a wrong message in the TT.
- Determining the way that modality was realized in ST using either a finite, mood (modal) adjunct, or interpersonal metaphor and examining how the modality realization was conveyed in TT. This can ensure rendering the right equivalent that will convey the message correctly. The translator here has the permission to choose how to instantiate modality in TT and to use whatever form he sees fit, but with this freedom come with responsibility that consists in making sure to render the systems of modality (type-orientation-level). As illustrated in examples (1), (2), and (3) that the translator chose different forms to instantiate modality in TT, some of his choices were correct like in the examples (1), (2), (3), (4),(8),and (9)and others needed rectification like in the examples (5),(6), and (7).
- Detecting accurately the possible changes that occur when switching modality realization from congruent to metaphorical especially on the value system, the examples (5) and (6) shows how changes in the value system can drastically shift the rendered meaning by producing a wrong message in TT. However, changes occurring on the orientation system did not cause any shifts in the rendered meaning in TT as shown in (1), (2), and (3).

6- Conclusion:

The significance of (SFL) in translation students' training has been accentuated in this research paper through examining the translation of modality, a function of the mood that is considered the main system of language which instantiates the interpersonal metafunction. This study reveals several significant implications for translation theory, pedagogy, and practice, demonstrating the profound potential of SFL as a comprehensive analytical approach to understanding modal meanings across linguistic systems:

Theoretical Implications:

- This study shows how SFL can be a powerful analytical tool for cross-linguistic analysis by offering a thorough framework for comprehending modal translation.
- The study advances the knowledge of how interpersonal meanings are mediated between the Arabic and English linguistic systems.

Pedagogical Implications:

- By stressing metalinguistic awareness and strategic decision-making, the findings provide translation educators with a methodical strategy to teaching modal translation.
- The paper offers a scientific framework for modal expression analysis that translation-training programs might use.

Practical Implications:

- Professional translators who work with scientific materials can benefit from the research's insights into the difficulties of translating modal meanings.
- The analytical method based on SFL can be utilized as a diagnostic tool to find and fix modality-related translation issues.

SFL is a thorough approach that stands on a solid theoretical framework which can be exploited to analyze the ST language and to define its functions. This will make it easier to understand and detect errors /problems on the TT level, then to rectify the situation.

Throughout this paper, it has been shown that Arabic translation of English modality in popular science texts can be a rich material to study how modality works on the interpersonal metafunction in both English and Arabic languages, and how SFL can dissect modality in ST to know how its systems work and how it should properly be rendered in TT. Consequently, this will help students to notice and to apprehend that a metalinguistic examination of translation using SFL can assist translators in making accurate choices and decisions when translating modality in popular science texts.

**

7- The bibliography

- Aziz , Y. (1989). *A Contrastive Grammar of English and Arabic*. Mosul: Mosul University Press.
- Ahmed Mukhtar, O. (2008). *Dictionary of modern Arabic language*. Cairo: Alam AlKutub.
- Az-Zudjadji, A. (1986). *Huruf Al maani*. Irbid: Dar Al-Amal.
- Bell, R. (1991). *Translation and Translating: Theory and Practice*. New York : Longman Inc.
- Butt, D., Fahey, R., Feez, S., Spinks, S., & Yallop, C. (2001). *Using Functional Grammar:An Explorer's Guide*. Sydney: National Centre for English Language Teaching and Research: Macquarie University.
- Collins, P. (2005). The modals and quasi-modals of obligation and necessity in Australian English and other Englishes*. *English World-Wide*, 249-273.
- Davidse, K. (1987). M.A.K Halliday's functional grammar and the Prague school. In R. Dirven , & V. Fried, *Functionalism in linguistics* (pp. 40-79). Amsterdam: John Benjamins publishing company.
- Eggs, S. (2004). *An introduction to systemic functional linguistics*. London: Continuum.
- Halliday, M. (1994). *An introduction to functional grammar*. London: Arnold.
- Halliday, M. (2001). Towards a theory of good translation. Dans E. Steiner , & C. Yallop, *Exploring Translation and Multilingual Text Production: Beyond Content* (pp. 13-18). New York: Mouton de Gruyter.
- Halliday, M., & Martin, J. (1996). *Writing Science: Literacy and Discursive Power*. London : The Falmer Press.
- Halliday, M., & Matthiessen, C. (2004). *An introduction to functional grammar*. London: Arnold.
- Halliday, M., & Matthiessen, C. (2014). *Halliday's Introduction to functional grammar*. Abingdon, Oxon: Routledge .
- Haza' Al Rdaat, S. (2017). An Analysis of Use of conditional Sentences by Arab Students of English. *Advances in Language and Literary Studies*, 1-13.
- Hornby , A. (2005). *Oxford Advanced Learner's Dictionary of Current English*. Oxford: O.U.P.
- IPCC. (2007 a). FAQs. Dans S. D. Solomon, *Climate Change 2007: The Physical Science Basis (English version)* (pp. 94-127). Uk: Cambridge University Press. Récupéré sur <https://archive.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-faqs.pdf>
- IPCC. (2007 b). FAQs. In S. D. Solomon, *Climate Change (2007): The Physical Science Basis (Arabic version)* (pp. 102-141). UK: Cambridge University Press. Retrieved from <https://archive.ipcc.ch/pdf/assessment-report/ar4/wg1/ar4-wg1-faqs-ar.pdf>
- Jumino , S. (2011). EPISTEMIC MODALITY AND DEONTIC MODALITY:TWO SIDES OF A COIN. *JULISA*, 11(2), 156 – 179.
- Manfredi, M. (2014). *Translating Text and Context: Translation Studies and Systemic Functional Linguistics, Vol.II From Theory to Practice*. Bologna: Centro di Studi Linguistico-Culturali (CeSLiC).
- Matthiessen, C., Teruya, K., & Lam, M. (2010). *Key terms in systemic functional linguistics*. London : Continuum.
- Newmark, P. (1987). The use of systemic linguistics in translation analysis and criticism. Dans R. Steele, & T. Threadgold, *Language topics: Essays in Honour of Michael Halliday* (pp. 293-303). Amsterdam: Benjamins.
- Parret, H. (1974). *Discussing language*. the Hague.Paris: Mouton.
- Sampson, G. (1980). *Schools of linguistics*. Stanford, California: Stanford university press.
- Strauss, S., & Feiz, P. (2014). *Discourse Analysis:Putting Our Worlds into Words*. New York : Routledge .
- Thompson, G. (2014). *Introducing Functional Grammar*. Abingdon, Oxon : Routledge.

Vinay, J., & Darbelnet, J. (1995). *Comparative Stylistics of French and English: A Methodology for Translation*. Amsterdam : John Benjamins Publishing Company.

Yallop, C. (1987). The practice and theory of translation. Dans R. Steele, & T. Threadgold, *Language Topics: Essays in Honour of Michael Halliday* (pp. 347-351). Amsterdam : Benjamins.